

## CLAIMS

- 1 - A device for receiving and/or transmitting electromagnetic waves with radiation diversity, characterized in that it comprises, on a common substrate (3), at least a first antenna of the slot type (1), the slot being in the form of a closed curve of perimeter equal to  $k'\lambda_s$  where  $\lambda_s$  is the wavelength in the slot at the operating frequency and  $k'$  an integer, and the first antenna being electromagnetically coupled to a first supply line (6), and a second antenna radiating parallel to the substrate (2), the second antenna being positioned inside the curve forming the first antenna and being connected to a second supply line (7), said first and second supply lines being connected via a switching means to means for exploiting the electromagnetic waves.
- 2 - The device as claimed in claim 1, characterized in that the first supply line (6) is implemented in microstrip technology or in coplanar technology.
- 3 - The device as claimed in claim 2, characterized in that the first supply line (6) has a length between its end and the electromagnetic coupling point equal to  $k\lambda_m/4$ , where  $k$  is an odd integer and  $\lambda_m$  the guided wavelength on the supply line at the central operating frequency with  $\lambda_m = \lambda_0/\sqrt{\epsilon_{r_{eff}}}$ , where  $\lambda_0$  is the free-space wavelength and  $\epsilon_{r_{eff}}$  the effective permittivity of the line.
- 4 - The device as claimed in any one of the preceding claims, characterized in that the second supply line (7) is implemented in microstrip technology or by a coaxial line.
- 5 - The device as claimed in claim 4, characterized in that when the line is

implemented in microstrip technology, a connection is made at the slot antenna between the part that is external and the part that is internal to the slot.

- 5        6 - The device as claimed in claim 5, characterized in that the connection is formed by a conducting insert (8) having a width equal to 2 to 3 times the width of the line implemented in microstrip technology.
- 10       7 - The device as claimed in either one of claims 5 and 6, characterized in that the connection is positioned in an electrical short-circuit plane for the slot.
- 15       8 - The device as claimed in any one of claims 1 to 7, characterized in that the slot antenna is formed by an annular slot or a slot of polygonal shape such as a square or rectangle.
- 20       9 - The device as claimed in any one of claims 1 to 8, characterized in that the antenna (2) radiating parallel to the substrate is formed by a monopole or a helix operating in transverse mode.
- 25       10 - The device as claimed in claim 8, characterized in that it may comprise several slot antennas interlocking one with another.
- 30       11 - The device as claimed in any one of claims 1 to 10, characterized in that the antenna (2) radiating parallel to the substrate is positioned at the center of the slot antenna or antennas.